

**COMPACT, DISTRIBUTED INDUCTIVE ELEMENT  
FOR LARGE SCALE INDUCTIVELY-COUPLED PLASMA SOURCES**

**Abstract of the Disclosure:**

5           An inductively coupled plasma source is provided with a compact inductive element that is configured to produce a spatially distributed plasma particularly suitable for processing large scale wafers. The element in its preferred embodiment is formed of a sheet material for compactness and ease in configuring. The element is located outside of a dielectric wall or window of  
10 a processing chamber, generally congruent to the dielectric wall or window, formed of one or more layers or loops. The conductor provides a conductive path around each loop that has a serpentine or oscillating configuration that renders the path around each loop greater than the circumference of the element. The path is so shaped by cutouts along the side edges of the element.  
15 The conductor is formed of alternating sections of large and small aspect ratio, defined as the width across the path to the thickness of the sheet. The sections are also defined by cutouts in the sheet. Narrower sections concentrate currents, have higher inductances, and couple greater amounts of energy into the chamber, thereby producing rings of discrete plasma concentrations. One  
20 or more rings can be produced by configuring one or more loops of the inductive element so the higher inductance, lower aspect ratio sections lie at appropriate radii from the axis of the chamber.